LMS Seminar series 2024 – 25

Phase, orientation and strain mapping by nanodiffraction in the TEM

Speaker: Arthur Després, INP Grenoble
Date: September 26, 2024
Venue: Amphi GREGORY (Polytechnique building)

Abstract

Transmission microscopy is a highly varied field, with a wide range of diffraction, analysis and imaging methods. The SIMaP laboratory has specialized in scanning nanodiffraction techniques, notably through the development of the ACOM/ASTAR tool. This tool is used extensively for phase recognition, through an original method of coupling with chemical mapping obtained by EDX. After a general presentation of the tool, I will present two recent developments:

- The detection of 'complex' phases in 2xxx aluminum alloys.
- Strain mapping at the defect scale (precipitates, dislocations).

I will also highlight the usefulness of coupling with other characterization tools (X-ray diffraction, atom probe), or even with other transmission methods (high-resolution, EELS).

About the speaker

Since 2021, I've been a Maître de Conférence (Associate Professor) at Grenoble INP's Phelma school, and carry out my research at the SIMaP laboratory. My main teaching responsibilities include Forming, Materials characterization and Heat Transfer. In research, my activities mainly concern the characterization of microstructures by transmission electron microscopy (and to a lesser extent, scanning electron microscopy), in particular using the ACOM/ASTAR technique. I carried out my thesis from 2015 to 2019 at the University of British Columbia, Vancouver, Canada, where I worked on understanding the mechanisms of crystallographic texture evolution during hot rolling of ferritic stainless steels.

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